Specification Sheet

MOSCAD NFM XC

Mediation Device for Network Fault Management

MOTOROLA
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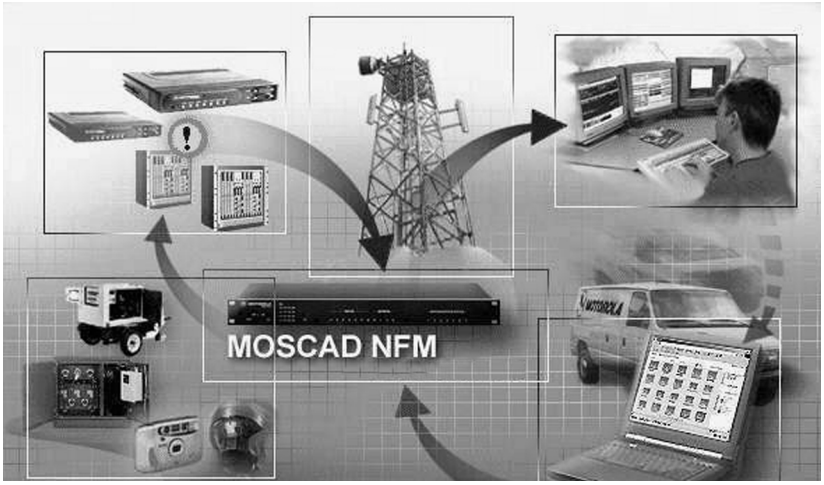


KEY FEATURES

- Built-in Web Server
- SNMP, NTP, HTTP, XML
- Intelligent Proxy Agent
- Local Logic & Intelligence
- 2-9 serial ports (RS232/485)
- Each Port supports up to 16 multiplexed serial ports
- 1-3 Ethernet LAN/WAN ports
- 48 DI, 16 DO, 8 AI
- Extensive Driver Library
- Certified for Motorola Network Managers: *FullVision™ INM, CDMA NMS: UNO, MOSCAD View*
- Compatible with popular Network Managers: *IBM Tivoli/NetView, HP/OpenView, TTI/Netrac, Compaq/TeMIP...*

KEY APPLICATIONS

- Automatic Backup Channels
- Automated Test Functions
- Network Time Sync
- Intelligent Battery & Power Management
- Environmental Alarms
- Site Security
- Antenna Monitoring
- Reach-through Craft Ports
- Protocol Mediation

KEY MARKETS

- Telecom Sites
- Cellular Sites
- Radio Towers
- Microwave Radio
- Private Networks
- Satellite Earth Stations
- Teleports
- Broadcasting Stations

Remote Management of SNMP and non-SNMP Devices

ELEMENT MANAGER FOR COMMUNICATION SITES

The MOSCAD NFM XC (**N**etwork **F**ault **M**anagement E**X**tended **C**ommunications) acts both as an Element Manager and Mediation Device in Network Management systems. It may connect to a large number of communications system devices in order to monitor their activity and report detected problems to a supervisory center.

Local intelligence permits control decisions without the need for intervention from a network management control center.

PROTOCOL MEDIATION

The MOSCAD NFM XC translates environmental and device alarms from both serial ASCII, TCP/IP data and discrete I/Os to SNMP. The unit also supports XML for logging messages, NTP for Network Time Sync, HTTP for Web Browser etc.

The best protocol for the communication task is used while providing commonly accepted information interchange to other devices.

PORT FLEXIBILITY

Serial and Ethernet/IP data ports permit connection to on-site devices in order to remotely supervise their operation. Additional Ethernet and serial ports can be added while the R-MUX Port Expander expands the connectivity for muxed ports.

Multiple ports, multiple communication protocols, and variable data speed allow almost any external data device to be connected to the MOSCAD NFM XC.

BUILT-IN WEB SERVER

Using a standard Web Browser you can access the status of all monitored devices, view extensive Event and Error Loggers or SNMP traps as well as download new IP interface software. You can also directly access email to send reports to a helpdesk.

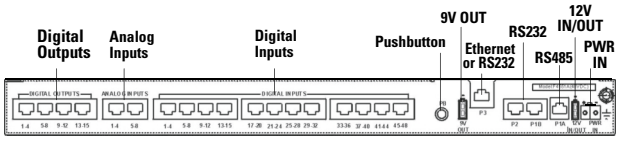
Convenient, yet secure, access from a technician's computer to the entire network with three distinct password levels.

MULTIPLE CONFIGURATIONS

The MOSCAD NFM XC Mediation Device is available in two basic configurations, 48DI and MultiPort:

48DI model: Provides 48 Digital Inputs, 16 Digital Outputs and 8 Analog Inputs. An Ethernet port is used to send SNMP traps to Network Managers and/or to connect to SNMP devices. It also comprises two RS232 ports, one selectable as RS485, to communicate with the configuration, craft or serial alarm ports in equipment such as Base station Radios etc.

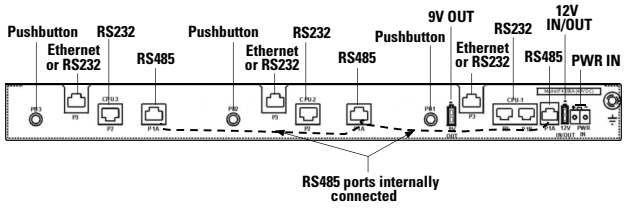
48DI
rear view



48DI
front view

MultiPort model: Used when no I/Os are required or when more ports than those provided in the basic 48DI are needed. It comprises 1-3 Ethernet ports for connection to SNMP or IP-based devices. An additional 2-6 RS232 ports and 1-3 RS485 ports may be used to connect to multiple configuration, craft or serial alarm ports in on-site devices.

MultiPort
rear view
(fully equipped)



MultiPort
front view
(fully equipped)

A compact, rack-mount hardware configuration incorporates the required Input/Output interfaces.The connectivity capabilities have been carefully selected to satisfy virtually all network fault management requirements.

flexibility

REMOTE CONTROL OF SITE ELEMENTS

The MOSCAD NFM XC provides a variety of discrete and serial interfaces to allow remote control of site elements such as Transceivers, Door Locks, Security Systems, Batteries, Uninterrupted Power Supplies, Generators etc.

An Extensive Driver Library is available for the most common site elements. A programmable interface ensures that additional drivers can be developed for new or old site elements not yet in the Library.

REMOTE ACCESS TO LOCAL TERMINALS AND CONSOLES

Telnet support provides connectivity to local device consoles over serial ports. Even without Telnet, device craft ports can be accessed by using the Host Terminal Emulation driver supplied as part of the MOSCAD SiteBuilder configuration tool.

Reach-through connectivity cater for continued support of all legacy equipment.

AUTOMATED TEST AND DIAGNOSTICS FUNCTIONS

The MOSCAD NFM XC incorporates self-diagnostic software routines and may include automated test functions for Receive Path and VSWR Testing etc. to help maintenance personnel identify and correct operational problems quickly.

Self-diagnostics, automated test functions and error reporting capabilities plus local LEDs, enable maintenance personnel to repair site malfunctions in the shortest possible time.

ACCESSORIES

The R-MUX Port Expander, which can be connected to both the MultiPort and the 48DI, provides port expansion by multiplexing up to 16 additional RS232 serial ports. The R-MUX 1001 multiplexes all external RS232 ports onto a single NFM XC port, while the R-MUX 1004 multiplexes ports in groups of four onto each NFM XC port. An optional Ethernet/IP port with serial port can be added to both models.

Flexible expansion configurations cater for all – one serial port active at a time, or up to four at a time.

R-MUX 1001
rear view
(basic, 8 port Mux)

R-MUX 1004
rear view
(fully equipped,
4 x 4 port Mux + one Ethernet)

TYPICAL NFM APPLICATIONS

ANTENNA MONITORING
- Forward Transmit Power
- Antenna Reflected Power
- Receive Path Testing
- Antenna VSWR Testing
- Tower Lighting Control

POWER MANAGEMENT
- AC Power Status
- Main Battery Voltage
- Main Battery Charging Current
- Remaining Battery Life
- Backup Battery Voltage
- Generator Status, Operation & Fuel Level

CRAFT PORTS
- Terminal Emulation for Remote Console Access
- Telnet for Remote Console Access over IP
- Remote RSS (Radio Service Software)
- Remote CSS (Configuration Service Software)

ENVIRONMENTAL ALARMS
- Heating, Ventilation & Air-Condition (HVAC)
- Air Flow
- Ambient Temperature
- Relative Humidity
- Flood Water Level
- RF Radiation Level

SERIAL ALARM PORTS
- Base-station Radios
- Multiplexers
- Microwave Radios
- Time & Frequency References
- Comparators
- Voting Receivers
- Broadcast Transmitters
- Switches
- Battery Monitors & UPS

SITE SECURITY
- Intrusion Alarm
- Fire Alarm
- Smoke Alarm
- Access Control (via serial port)
- Entry/Exit Audit Trail

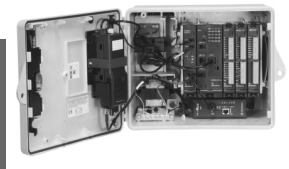
WEB SERVER
- Supports standard Web Browser (Internet Explorer)
- Monitors all Site Devices
- Event Logger and Viewer (5000 events)
- Three-level Access Password
- Download New IP Interface Software

PROTOCOL MEDIATION
- Serial ASCII to SNMP
- TCP/IP to SNMP
- MOSCAD MDLC to SNMP
- Discrete I/O Alarms to SNMP traps
- Programmable Interface for Site Elements

Optional (contact your nearest Motorola office for availability):
- Other protocols to SNMP

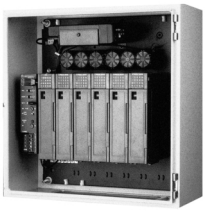
MOSCAD MEANS SCALABILITY

MOSCAD-L INDOOR, 4-SLOT DIN-RAIL

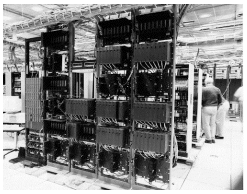


MOSCAD-L OUTDOOR, 4-SLOT NEMA-4X

MOSCAD NFM XC 48DI+MULTIPORT+R-MUX INDOOR, RACKMOUNT



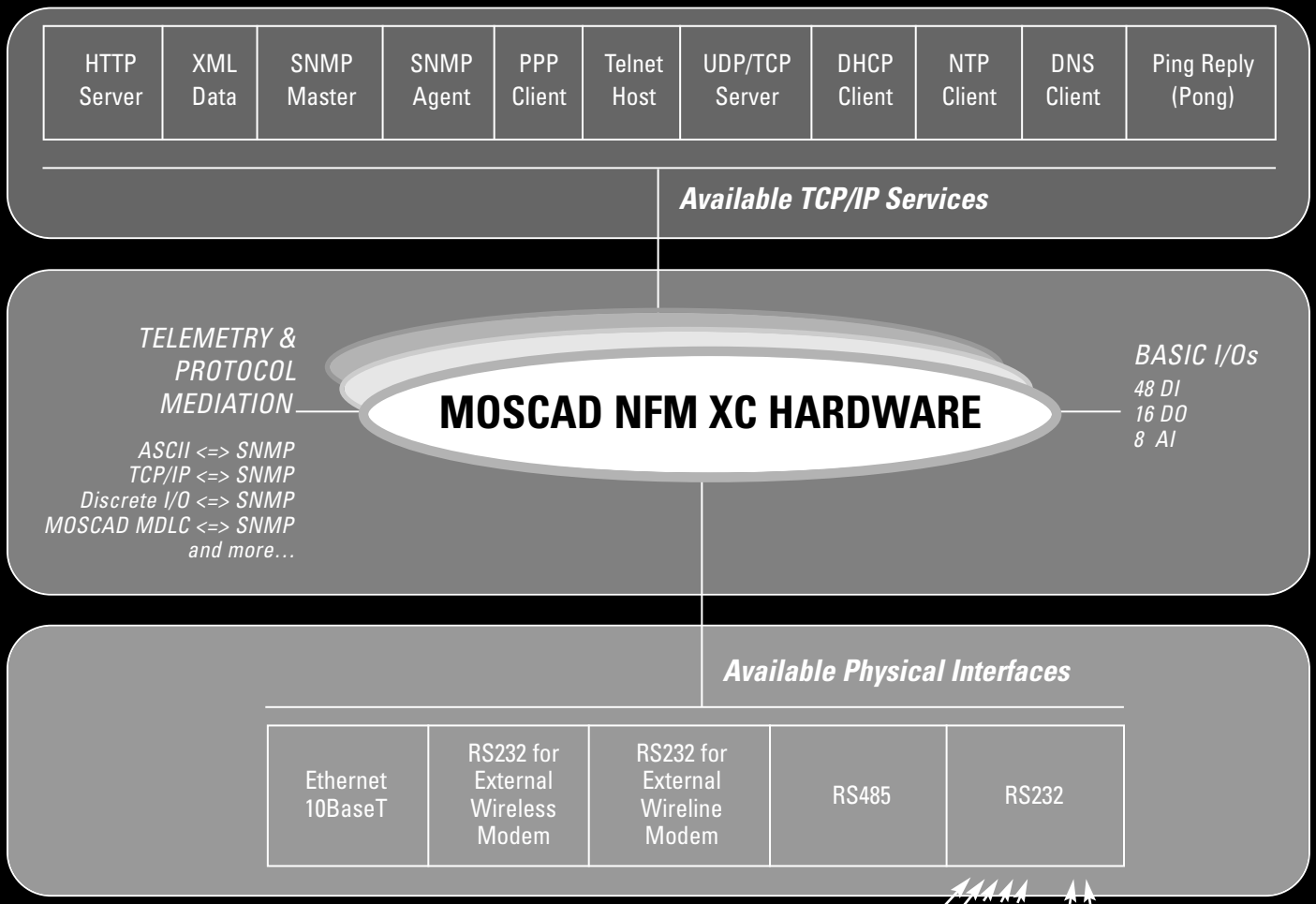
MOSCAD RTU OUTDOOR, 6-SLOT NEMA-4X

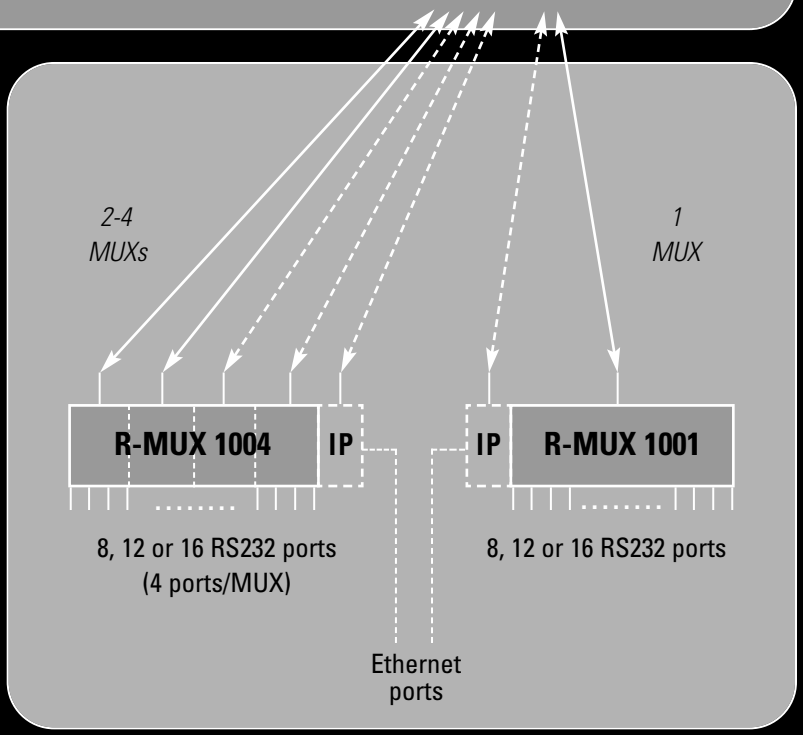


MOSCAD NFM XC & RTU INDOOR/OUTDOOR, RACKS OR 8-SLOT MULTIPLE RACKS/CABINETS

I/O & Port Capacity

MOSCAD NFM applications can run on a number of different hardware platforms which form the MOSCAD RTU/Mediation Device family. Configurations can vary from small to very large I/O and port capacity in both indoor and outdoor environment.





AT A GLANCE

MOSCAD NFM XC SERVICES AND PHYSICAL INTERFACES

SPECIFICATIONS

Discrete Inputs/Outputs		
	48DI NFM XC RTU only	48 Digital Inputs (wet/dry contacts); 16 Digital Outputs (SPST relay, contact rating 75 VA/30W, 0.5A@30 Vac/60Vdc); 8 Analog Inputs (±5 Vdc, 12 bits including sign)
RS232/485/Ethernet Ports		
	Data Rates	RS232 and RS485 – up to 57.6 kb/s; Ethernet – 10 Mb/s
	48DI NFM XC RTU	Basic: Two RS232 ports, one selectable as RS485 (2-wire, half-duplex) plus one Ethernet port Option: Replace the Ethernet port with a third RS232 port (option V345)
	NFM XC MultiPort	1-3 Ethernet/IP and 2-9 RS232/485 ports possible - refer to Port CombinationTable under Ordering Information for all possible combinations Basic: Two RS232 ports, one selectable as RS485 (2-wire) plus one 10BaseT Ethernet/IP port Options: Two additional Ethernet/IP and four additional RS232 ports in combinations of 1 IP+2 RS232 or just two RS232 (options V690, V426); replace the basic IP port with RS232 (V345)
	R-MUX Port Expander	R-MUX 1001: 8-16 RS232 ports can be multiplexed onto a single MOSCAD RS232 port (8, 12 or 16 port mux) plus one Ethernet port (option V527) R-MUX 1004: 8-16 RS232 ports can be multiplexed in groups of four onto four separate MOSCAD ports (2x4, 3x4 or 4x4 port mux) plus one Ethernet port (option V527)
Protocols Supported		SNMP MIB I/II, TCP, UDP, Telnet, PPP, NTP, DNS, DHCP, ASCII, HTTP, XML, X.25, MOSCAD MDLC, Modbus Binary/ASCII Optional – other serial or LAN protocols (consult factory for availability)
Web Server		
	Browser	Can be viewed with standard web browser (Internet Explorer ≥V6.x or V5.5+XML plug-in)
	Coverage	All Sites, Devices and Objects monitored by the MOSCAD NFM XC including the unit itself
	Event Logger Buffer	Up to 5,000 events
	Access Control	Three password levels; Read Only, Read & Configure, Read & Permits
	Auxiliary	On-line diagnostics of hardware, software and application; remote IP system download
Operating Power		
	Voltage Primary	±24 Vdc (18.6-32V)/max 1.75A or ±48 Vdc (36-60V)/max 1.9A; optional external 120/230 Vac to 12 Vdc Power Supply/Charger + Battery; R-MUX: 12 Vdc (8-16V)/max 0.75A, supplied from MOSCAD NFM XC 12V OUT or external source
	Voltage Secondary	IN: 12 Vdc ±5%/1.9A (Alternate power source; may not be used if Primary Voltage input used) OUT: 12 Vdc/0.75A and 9 Vdc/0.75A (5 or 6 V selectable); combined drain for 12V+9V, max 9W R-MUX: follows Primary 12V IN
	Power Consumption	48DI: 7W nominal, 22W max (when fully equipped + all relays on + max drain on 9V OUT) MultiPort: 12W nominal, 22W max (when fully equipped + max drain on 9V OUT) R-MUX 1001, 1004: 9W max (can be fed from 12V OUT of MOSCAD NFM XC)
	Inrush Current	@24V: max 22A for 1 ms; R-MUX: @12V; max 25A for 1 ms @48V: max 30A for 1 ms
Physical		
	Dimensions	1 Rack Unit high (19˝W x 1.75˝H x 12˝D, 482 x 44 x 278 mm); box is a bit narrower than 19" with depth adjustable side mounting brackets so that the unit can be flush-mounted in cabinets
	Weight	Approx. 2.5 kg (5.5 pounds)
	Temperature Range	Operating: –30 to +60°C without Ethernet/IP; 0 to +60°C for Ethernet/IP interface (UL Listed to +55°C) Storage: –55 to +85°C
	Humidity	0-95% RH @ +50°C (tested per RS-152-B, RS-204-C, MIL-810E Method 507.3)
	Display Indicators	19 LEDs; 2 for power plus 17 per CPU incl. 9 for port activity; in 48DI model another 18 for I/Os (7 for DI group, 4 for DO group, 7 status); group selectable via pushbutton; RMUX: 1 power LED
Regulatory Standards		
CE c UL us LISTED I.T.E. E155674	**Safety**	UL listed: UL 60950, CSA 22.2-950, EN60950
	Radiated & Conducted Emission	CFR 47 FCC part 15, subpart B (class A); CE EMC: EN55022 (class B), EN50081-1, EN61000-6-3
	Electro-Static Discharge	EN55024/EN61000-4-2 (air discharge 8 kV, contact discharge 4 kV)
	Radiated Immunity	EN55024/EN61000-4-3 (6 V/m)
	Electrical Fast Transients	EN55024/EN61000-4-4 (0.5 kV, 60 s duration)
	Conducted RF Immunity	EN55024/EN61000-4-6 (3 Vrms)
	Power Freq Magnetic Field	EN55024/EN61000-4-8 (3 A/m)

Specification subject to change without notice.

ORDERING INFORMATION

Main Type	Subtype	Model	Accessory (field install)	Description
48DI NFM XC	**24V**	F4550 (replaces F4530)	---	24 Vdc positive or negative ground operation with two RS232, one of which is RS232/485 selectable plus one 10BaseT Ethernet port
	48V	F4551 (replaces F4540)	---	48 Vdc positive or negative ground operation with two RS232, one of which is RS232/485 selectable plus one 10BaseT Ethernet port
MultiPort NFM XC	**24V**	F4555 (replaces F4535)	---	24 Vdc positive or negative ground operation; with two RS232, one of which is RS232/485 selectable plus one 10BaseT Ethernet port
	48V	F4556 (replaces F4545)	---	48 Vdc positive or negative ground operation; with two RS232, one of which is RS232/485 selectable plus one 10BaseT Ethernet port
	Add RS232, no Ethernet	V345	FRN5724 + FLN6458	Replace 10BaseT Ethernet port with one more RS232 port – see Port Combination Table
	Add RS232	V426	FLN3064	(For MultiPort models only). Add 2 RS232 ports; max. two units – see Port Combination Table
	Add RS232 plus Ethernet	V690	FLN9884	(For MultiPort models only). Add one RS232 port and one 10BaseT Ethernet port; max. two units – see Port Combination Table
	Power Supply/Battery	V436	FLN3036	Power Supply/charger with 5Ah battery on 19" rack (120 Vac/3A@12V - connects to 12V IN)
	Power Supply/Battery	V251	---	Modifies V436 to 230Vac Power supply
	Software Licences	VA2xx	---	One license required per monitored device (xx denotes the different drivers) the Driver Library is installed as part of the SiteBuilder
Manuals				
	MOSCAD NFM XC	---	6802965C65	Installation and Owner's Manual for NFM XC Mediation Devices (48DI/RTU and MultiPort) – one supplied with each MOSCAD NFM XC unit ordered.
R-MUX 1001 Port Exp.		F4558	---	Eight RS232 expansion ports multiplexed onto a single RS232 NFM XC port
R-MUX 1004 Port Exp.		F4568	---	Eight RS232 expansion ports multiplexed in groups of four, each onto one NFM XC port
	Add RS232	V582	FLN3059	Add four RS232 expansion ports (max two units for total of 16 ports)
	Add Ethernet	V527	FLN3091	Add 10BaseT Ethernet port for IP/SNMP interface (comes with RS232 port)
Manuals				
	MOSCAD R-MUX	---	6802965C60	Installation and Owner's Manual for R-MUX Port Expanders (R-MUX 1001 and 1004) – one supplied with each MOSCAD R-MUX unit ordered.
IP Gateway				
	in NEMA4 Enclosure	F43xx		xx denotes radio frequency and power level (see catalog sheet R3-11-095)
	in Rackmount	F43xx+V051		xx denotes radio frequency and power level (see catalog sheet R3-11-095)
Software Tools		V212	F2316+F4516	Supplies basic NFM configuration tools with NFM XC (see catalog sheet R3-11-2014)

PORT COMBINATION TABLE (EXCLUDING R-MUX)

Model	RS232[1]	RS485[2]	Ethernet / IP	Order options
48DI NFM XC F4550/51	1	1	1	Basic models
	2	0	1	Basic + using port 1B
	2	1	0[3]	V345
	3	0	0[3]	V345 + using port 1B
MultiPort NFM XC F4555/56	1	1	1	Basic models
	2	0	1	Basic + using port 1B
	2	2	2	V690
	3	2	1	V426
	3	3	3	V690 x 2
	4	3	2	V426+V690
	5	3	1	V426 x 2
	6	3	0[3]	V345+V426 x2

Notes:

(1) Some RS232 ports may be limited in application usage when IP interface is used. Refer to MOSCAD Fault Management System Planner (R4-11-1000) or Site Builder manual/help (included in F4516 CD-ROM).

(2) Port 1 is selectable as RS-485 (2W, half-duplex) or RS-232. RS485 is normally used to internally interconnect between port boards and/or to cascade to additional NFM XC units; if only one port is used, up to 31 external devices can be connected on a multi-drop wire-line with the originating port acting as device driver.

(3) If zero Ethernet ports configuration is selected, obviously services over Ethernet/IP like Web Server will not be available.

MOTOROLA

Refer to the Motorola web sites **http://www.mot.com/MOSCAD** or **http://www.moscad-systems.com** or to our regional offices:

Motorola U.S. & Canada:
1301 E. Algonquin Road
Schaumburg, Illinois 60196
Phone: 1-888-567-7347
moscadsales.na@motorola.com

Europe, M. East & Africa:
Tel: +972-3-565-8127
Fax: +972-3-562-5774
moscadsales.emea@motorola.com

Latin America & Caribbean:
Tel: +591-4-423-4272
Fax: +591-4-415-5250
moscadsales.la@motorola.com

Asia & Pacific:
Tel: +65-6486-3433
Fax: +65-6483-1563
moscadsales.asia@motorola.com

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